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**Rejection Under 35 USC § 102(e)**

The Office rejects claims 1-11 under 35 USC § 102(e) in view of Bae (U.S. Patent 5,626,585). Applicants respectfully reiterate that independent claim 1 and the claims that depend directly or indirectly therefrom are patentable over the cited reference because Bae does not teach or suggest at least the patentable feature of claim 1 of:

*"...depositing a first masking layer over the semiconductor film and removing portions thereof to form a **plurality of holes**... [and]... performing an implantation in the semiconductor film using at least the first masking layer as an implantation mask to define source and drain regions, an undoped conduction channel between the source and drain regions, and a field-relief region having a lower doping concentration than the drain region between the conduction channel and the drain region."*

The inventive process of claim 1 includes the forming of a plurality of holes in the masking layer (e.g. forming a plurality of holes in the insulating layer 8). The masking layer with the plurality of holes is used as the mask for a subsequent implantation step, which forms the source and drain regions, an undoped channel, and a field relief region between the conductive channel and the drain.

As explained in the application as filed, the forming of the more heavily doped source and drain; the lightly doped field-relief region; and the channel in a **single implant** step

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beneficially simplifies the manufacturing process of the electronic devices. The **capability** of forming the source, drain, channel, and field-relief region in a single implantation step **is provided** by the masking layer having a **plurality of holes**. Furthermore, as described in the application as filed, the doping dose and distribution is dictated in a controllable manner by selecting the suitable density and size of the holes in the masking layer. (Please refer to page 2, lines 19-21; page 3, lines 22-29; and pages 7 and 8 of the application as filed for support for these assertions.)

Applicants reiterate that the reference to Bae is drawn to the fabrication of a semiconductor device, **but does not teach or suggest** the claimed process of depositing of a first mask and removing portions thereof to form a plurality of holes.

Rather, the reference to Bae teaches photolithographic processing using a photoresist pattern to form the **mesa** of a MOSFET from the gate metal layer 54a and buffering layer 55a. This mesa is disposed above the channel, and the regions on either side of the channel are unmasked. Plainly, the reference does not provide the inventive formation a mask having a plurality of holes therein as is specifically claimed. (Please refer to column 4, lines 11-44 of Bae for support for this assertion.)

The Office is attempting to read the formation of a mesa via a photolithographic etching process as the formation of a masking layer with holes. It is respectfully submitted that this is a wholly improper and unreasonable interpretation of the reference. To this end, the claimed invention includes

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forming a masking layer with holes. The masking layer of Bae is the mesa of the refractory metal layer and the gate oxide layer. These layers have no holes formed therein. Stated differently, the claimed process leaves a masking layer with holes for use in an implantation step, whereas the reference to Bae completely removes all of the masking layer except for the gate mesa, which has no holes.

Additionally, the reference to Bae differs from the invention of claim 1, because it requires **two separate implant steps** to form a lightly doped drain (LDD) transistor structure. The first implant step, which is used to form lightly doped source and drain regions, 56, 57, is followed by the formation of a polysilicon spacer (please refer to Figs. 3D and 3E of Bae) and a second implantation that forms the highly doped drain and source regions, 59, 60. The second implantation required by Bae uses the gate structure, which includes the etched refractory metal layer 54a, the portion 58a formed on the side walls of the refractory metal layer, and the etched polysilicon layer 53a, as the implant mask. (Please refer to column 4, lines 45-column 5, line 21 of Bae for support for this assertion.)

In contrast, claim 1 includes the limitation of performing **an** implantation, which is clearly in the singular tense. Any interpretation of the teachings of Bae for the claimed implant (singular) to *define the source and drain regions, an undoped conduction channel between the source and drain regions, and a field-relief region having a lower doping concentration than the drain region between the conduction channel and the drain region* is wholly improper.

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Accordingly, and for at least the reasons set forth in detail above, it is respectfully submitted claim 1, and claims 2-11, which depend from claim 1 directly or indirectly from claim 1, are patentable over the cited reference. Accordingly, withdrawal of the 35 U.S.C. § 102(e) rejections is respectfully requested.

#### Conclusion

In view of the foregoing, withdrawal of all objections and rejections is respectfully requested. Allowance of all pending claims is earnestly solicited.

Except as otherwise stated in the previous Remarks, applicants note that each of the amendments have been made to place the claims in better form for U.S. practice or to clarify the meaning of the claims; not to distinguish the claims from prior art references, otherwise narrow the scope or comply with other statutory requirements. Moreover, Applicants reserve all rights they may have under the Doctrine of Equivalents.


In the event that there are any outstanding matters remaining in the present application, the Examiner is invited to contact William S. Francos, Esq. (Reg. No. 38,456) at (610) 375-3513 to discuss these matters.

If necessary, the Commissioner is hereby authorized in this, concurrent, and further replies to charge payment or credit any overpayment to Deposit Account Number 50-0238 for any additional fees under 37 C.F.R. §1.16 or under 37 C.F.R. §1.17.

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Respectfully submitted on behalf of:  
Philips Electronics North America Corporation

  
William S. Francos, Esq.  
Reg. No. 38,456

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VOLENTINE FRANCOS, P.L.L.C.  
12200 SUNRISE VALLEY DRIVE  
SUITE 150  
RESTON, VA 20191  
Tel.: (703) 715-0870  
Fax.: (703) 715-0877

**FAX RECEIVED**  
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